



MEDICINE

Matters

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PUBLISHED
BY UEFA'S FOOTBALL
DEVELOPMENT
DIVISION





COVER

Christoph Spycher of Switzerland getting ahead of Ireland's Stephen Carr in the EURO 2004 qualifiers. The finals in Portugal will call for meticulous medical preparation.

PHOTO: KEYSTONE

EDITORIAL THE ESSENTIAL ROLE OF INFORMATION

BY GERHARD AIGNER

It was the issue of doping which, at the end of the 1970s, caused UEFA to set up a study group which, in 1986, resulted in the establishment of its Medical Committee.

Attitudes have moved on somewhat since then, although doping remains a crucial issue for sport and, consequently, for the Committee. In the late 1970s, the focus was mainly on competitions and the need to protect their integrity. Over the years, footballers themselves became the centre of attention and the objective gradually changed from repression to prevention, ultimately following the adage that "*prevention is better than a cure*".

Nowadays, the Medical Committee deals with a wide range of different issues, including nutrition, rehabilitation, physical preparation and the analysis of injuries and their causes. Its work has therefore become closer to that of the Technical Development Committee insofar as it also is involved in improving quality of play through training. Its recommendations have already had some important practical results, such as the decision to cut the number of UEFA Champions League matches in a schedule

designed to reduce the burden on elite footballers.

It is therefore important that the Medical Committee's activities should receive as wide an audience as possible. At UEFA level, its work is publicised through events such as the symposiums aimed at national football association doctors. Another means is this publication, *Medicine Matters*, which is widely disseminated in order that club doctors might also benefit from the Committee's work and learn about its activities.

We should not fool ourselves into thinking that excellent physical preparation will one day be sufficient to eliminate the temptations of doping, but it is certain that the more familiar athletes (and footballers) are with their bodies and the way they work, the more they will respect them. For that reason, the Medical Committee's role in disseminating information is extremely valuable.

Gerhard Aigner
Chief Executive

In the issue of "Medicine Matters" published in May 2003, we presented the first results from an on-going injury study on top-level professional football teams. The project started in the 2001/02 season with an in-depth analysis of injury patterns at eleven major clubs: Arsenal FC and Manchester United FC from England; Paris Saint-Germain FC, Stade Rennais and RC Lens from France; AC Milan, FC Internazionale and Juventus from Italy; AFC Ajax and PSV Eindhoven from the Netherlands; and Real Madrid CF from Spain. In a pilot study from January to June 2001, we also followed eight teams from the Danish Superleague and the results from these teams are included in this review.



THE INJURY LIST

Results of the UEFA injury study on professional football in Europe

BY PROF.
JAN EKSTRAND,
MD, PHD

The football calendar
The previous article presented exposure data for teams and players. We confirmed that there are considerable differences in the number of matches played in a given season. However, the crowded fixture list seems to be acceptable to the top teams involved in the study. Even if some had between 60 and 76 matches during a season, the number played by individual players was much lower – a mean of 36 matches per player per season. Despite the considerable differences in the number of matches played by clubs in different countries, there was very little difference in the average number of matches played by individuals. In other words, the response to heavier workloads was a larger squad, allowing the coach to rotate players and avoid overplaying.

It is often suspected that, when domestic and European competitions approach their climax, teams tend to field all their star players even if there is a risk of mental exhaustion and/or injury. But our finding that the injury risk was no higher during the last ten weeks of the season indicates that today's top player can cope with a congested match calendar for over a short period.

However, every second year the climax to the club season is rapidly followed by another series of intense matches at a World Cup or a European Championship. In 2002, the first World Cup matches were played only two weeks after the UEFA Champions

League final – which could explain why a number of Europe's top players were deemed to have underperformed in Korea/Japan. We found that 29% of the players from our study incurred injuries during the World Cup and that 32% were considered to have performed below their normal standard. This suggests that carrying end-of-season fatigue into a major international event may increase the risk of injury and underperformance.

The risk of injury
Injury was defined according to the 'time-lost concept' (an injury sustained in any football-related activity that caused the player to be absent from training or from a match). Injuries were classified into four categories of severity according to the length of absence from training and matches. In total, the 454 players involved in the study incurred 1,053 injuries.

The mean injury risk for the 19 teams was 12 injuries per 1,000 hours of total exposure. Interestingly, the mean was 9 injuries per 1,000 hours of exposure for the 11 selected teams versus 14 for the Danish teams in the pilot study.

As a rough figure, a team level can expect 55 injuries that cause absence from training and/or matches during any given season. Of these 55 injuries, 19 are slight (causing absence less than 3 days), 15 are minor (absence 3-7 days), 14 are moderate (8-28 days)

and 7 are major (>28 days). Statistically, an individual player sustains two minor injuries each season and a major injury every third season.

Injury risk in training
We found an average of 7.9 injuries per 1,000 hours of training in this study. The Danish teams had a higher incidence compared to the Italian teams but there were no significant differences between the other countries. These figures are similar to those found in studies of national teams, professionals and amateurs at different levels in Sweden. It seems that the risk of injury during training is approximately the same regardless of the level of play.

Injury risk in matches
The risk for injury during matches was a mean 29/1,000 hours of exposure. There was a great variation between teams (range 9-51) and countries (range 16-44). The teams from France had a significantly lower injury risk in match play compared to the teams from England and Holland (16 injuries/1,000 hours of match play compared to 44 and 39). In previous studies in Sweden we have found the injury incidence for match play to be 11-14 in amateurs, 19-22 in professionals and semi-professionals and 30 for national teams. It is well known that the risk of being injured is greater during a match than during training. It seems obvious that the risk of being injured in match play increases with the level of play. The risk figures for the teams in this study are similar



Injuries/1'000H of exposure

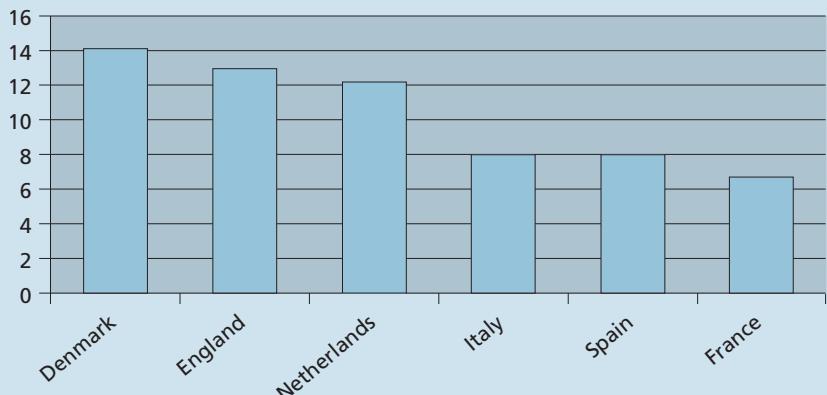


Figure 1: The risk for injury in different countries (Expressed as the number of injuries per 1,000 hours of exposure).

to the risk figures for the Swedish national team, which seems relevant since it concerns football at top level.

Climate, pitches and injuries

When analysing the total injury incidences (the number of injuries per 1,000 hours of exposure to training and matches) differences were found between the countries – see Fig.1

There may be many reasons for these differences. However, a striking finding was the geographical location. The teams from the south of Europe (Italy, France and Spain) had a lower injury incidence compared to teams from the more northern part (Denmark, England and Holland). The risk of injury was almost twice as high in the northern part compared to the southern part (14 v 8 injuries/1,000 hours of exposure, $p=0.008$).

The risk of major injuries (absence >28 days), overuse injuries and sprains (injuries to joints and ligaments) was significantly lower in the teams from the south while there was no significant difference in the risk of strains (muscle-tendon injuries).

It may be argued that the teams from Denmark were studied in a different period from the others and that all of them were not at the same high level as the other 11 in the study. However, even if we exclude the teams from Denmark, the difference is still highly significant.

This supports a hypothesis that climate affects the risk of injury. A cold and rainy climate with subsequently poorer surface conditions (wet and slippery pitches) might increase the

risk of ligament and joint injuries as well as overuse injuries. Muscle-tendon injuries, on the other hand, might be more correlated to the intensity of play. However, the present study did not include any variables concerning climate and surface conditions and therefore conclusions concerning these factors cannot be drawn. To further evaluate the correlation, UEFA has decided to perform an extended study with different climate variables during the 2003/04 season.

Artificial turf – the solution to climate problems?

UEFA is aware of the possible relationship between surface conditions and injuries, and has created the Artificial Turf Experts Panel with the aim of examining the possibility of introducing artificial surfaces at UEFA matches. If ground conditions are related to the risk for injury, training and playing on artificial

turf might offer a route towards reducing the risk of injury.

Injuries during pre-season training

It has been argued that players are at a greater risk during the pre-season period. Several authors have noted a peak in the number of injuries during pre-season with the figure gradually decreasing during the season. However, to evaluate the risk of injury, the exposure factor has to be considered. The great number of injuries during the pre-season may only reflect an increased exposure to training (or matches). In the present study we considered the exposure factor and expressed the injury risk as the number of injuries per 1,000 hours of exposure. We could not find any difference in injury risk between pre-season and the competitive season, either in the total risk of injury or for overuse injuries, major injuries or re-injuries.

Distribution of injuries by type

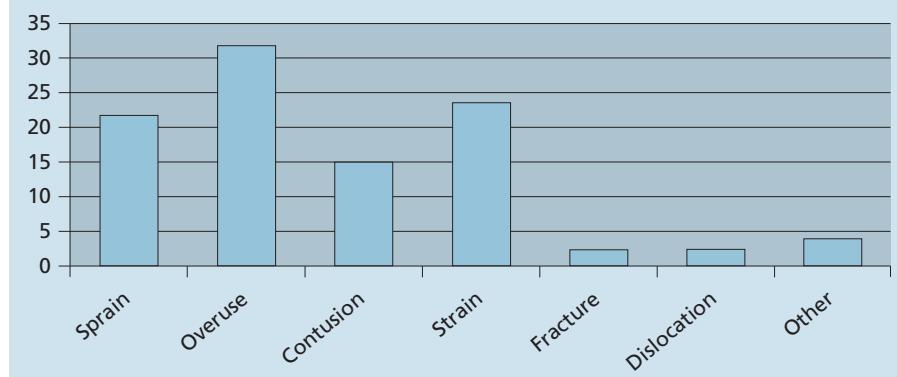


Figure 2: Distribution of injuries by type.

The location of injury was similar in different countries, with the majority of injuries occurring in the lower extremity (89%).

Location of injuries

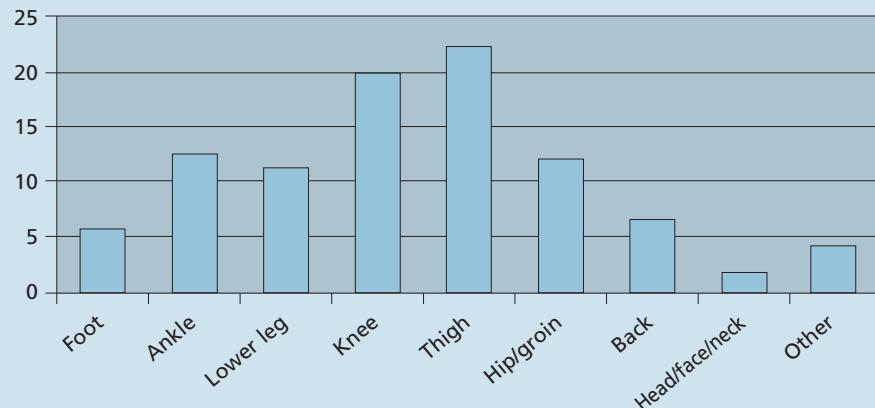


Figure 3:
Location of injuries.

Injury types and location

The types of injury are shown in Fig.2, and injury locations in Fig.3. Overuse was the most common injury type (31%), typically affecting the groin, knee and lower leg. The incidence of overuse injuries varied between 1.5 to 5 injuries/1,000 hours of exposure with no significant difference between countries. Every fourth injury was a muscle-tendon injury (strain) and, again, there was no difference between countries.

Muscle injuries – the most common at top level?
The risk of strains was 2.9/1,000 hours of exposure and was similar in all countries. The mean absence was 19 days and the recurrence rate was 9%. The thigh was the most frequent site of injury, followed by the knee region. Muscle injury to the thigh region was the single most common injury sub-type.

Risk of ankle sprains lower at top level?

Ankle injuries are among the most common in football with previous studies indicating that they account for 11-20% of all injuries. The risk of an ankle sprain has been reported to be about 2 injuries per 1,000 hours of exposure. The absence from football is normally short. Absence from training has been reported to be 4 weeks in amateurs and 18 days in professionals. In our study, ankle injuries accounted for 13% of all injuries, with an incidence of 1.3/1,000 hours of exposure. There was no significant difference between countries (the incidence varied between 0.8-1.8). Ankle sprains are normally not severe, the mean

absence from training being two weeks in our study. The problem in football is the frequency rather than the severity of ankle sprains.

The lower risk of ankle sprain and the short rehabilitation period found in this study suggest that top-level teams have a thorough knowledge of optimal treatment and prevention. But the recurrence rate of ankle sprains was 21% in our study. This suggests that a monitored rehabilitation and tests are important before returning to team training and matches.

Rehabilitation – better safe than quick?

The percentage of re-injuries (defined as an identical injury within two months of the final rehabilitation day of the initial injury) varied. The Danish teams had an average of 30% re-injuries; the teams from Spain, England and Holland 19%; and the teams from France and

Italy 11%. Controlled rehabilitation including tests and rules for return to team training and matches might help to reduce the risk of re-injuries.

Foul play injuries vary between countries

Twenty-one percent of the match injuries were due to foul play (according to the referee). Contusions and sprains were the most common foul-play injuries. There were significant differences between the countries – see Fig. 4.

It would be interesting to further analyse the difference in foul-play injuries in different countries. The application of the rules could be a relevant factor if one accepts the thesis that the better the referee, the lesser the risk of foul-play injuries. But the way the players – and coaches – interpret the line between 'fair' and 'foul' might also vary in different countries.

Injuries due to foul play (%)

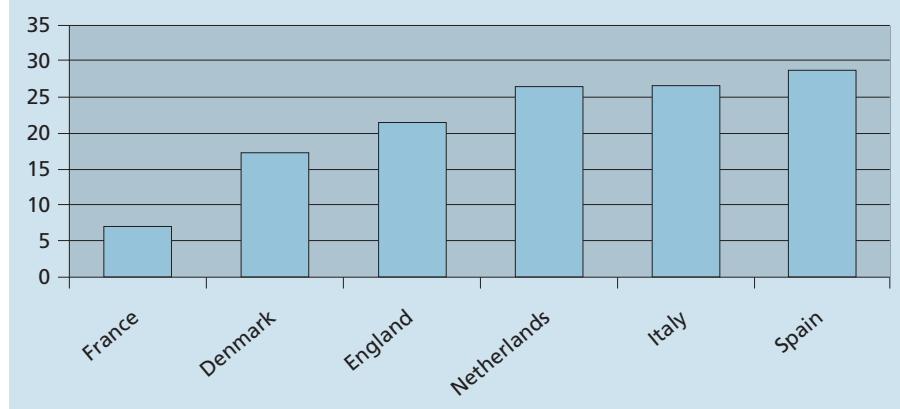


Figure 4: Injuries due to foul play.



Superficially, the team doctor at a futsal club enjoys certain advantages. He has fewer players to worry about and a smaller distance to cover if one of them requires treatment! But, of course, the demands and the professional standards are the same. On the other hand, the doctor can expect to encounter different injury patterns when the boot is not on another foot but rather...

THE FOOT IS IN A



Futsal: although the risk of injury is smaller than in eleven-a-side football, it is nevertheless real.

Lorenzo García Camacho is in a good position to compare injury patterns in futsal with those of the outdoor game. For the last 14 years, he has been the team doctor with the Spanish national futsal side that has won European and world honours, combining this role with the post of director of medical services at second division club Córdoba CF in the Spanish eleven-a-side professional league.

"In futsal," he comments, "the doctor can be grateful for the obvious advantages of playing on

a different surface. In the outdoor game, the combination of studs and a softer, uneven playing surface generates a higher risk of injury, particularly those related to meniscus or knee ligaments – notably ACL injuries. The need for the stud to grip the playing surface in the outdoor game creates a risk of the studs sticking into the surface, locking the ankle while permitting the knee to rotate. This situation is practically non-existent in futsal and, if I use the word 'practically' it is because I am very much in favour of using wooden parquet

playing surfaces for futsal as opposed to synthetic rubber-based surfaces which, as they are more absorbent, exercise a much greater grip on the playing shoe and expose futsal players to the same sort of meniscus and ligament injuries that are endemic to the outdoor game.

"The other obvious factor is that futsal is basically a non-contact sport and the lack of aerial play means that head injuries are minimal in comparison with the 11-a-side game.

"If I had to give advice to my colleagues about the type of injury they are most likely to have to deal with in futsal," Lorenzo García Camacho continues, "I would say that, in general terms, the focus switches from the knee to the foot. This is basically because the futsal shoe is much lighter and therefore offers less protection while, at the same time, the ball is smaller, harder and heavier than the ball used in the outdoor game.

"The futsal doctor needs to be prepared to treat different pathologies, with chronic condi-



DIFFERENT BOOT

tions more prevalent than specific injuries of a traumatic nature. In other words, it's a question of dealing with tendonitis (quadriceps, patella, Achilles tendon).

"On the other hand, the ratio of muscular injuries is similar to the outdoor game. Thorough warm-up procedures are even more important in futsal given the force required to shoot at goal with the heavier ball. Maybe my personal experience can throw some light on the matter because, in 14 years with the national futsal team I have encountered one ACL rupture and two meniscus injuries.

On the other hand, I have had to deal with various bone fractures in the foot, sprained ankles and muscular injuries. During my eight years with professional clubs in the outdoor game I have encountered a much greater number of ACL and meniscus injuries, along with a similar number of muscular problems. In general, I would say that 11-a-side football generates a much greater number of injuries and a much higher percentage of serious injuries that entail a long absence from the field of play."

Pascal Lefevre, team doctor of the French national futsal team since 1998, holds a similar point of view. Having worked in professional football for over 15 years, Dr Lefevre states: *"From a physiological point of view, futsal is much less strenuous than the 11-a-side game given the reduced size of the pitch. The cardiovascular demands of a futsal player are similar to those of a handball or basketball player, i.e. short bursts of intense energy. There are no specific injuries in futsal; apart from burns to the legs when falling. Futsal players suffer the same injuries as traditional football players."*

When asked whether the futsal player is injured more frequently, Dr Lefevre answers *"On the contrary. There are roughly half the number of injuries in futsal compared with 11-a-side football. The laws of the game are quite different, for example tackling is forbidden. In futsal, a certain number of personal or team fouls automatically entails temporary sending-off or double-penalties so players don't have an unconscious reflex to commit a foul. Consequently there are less injuries."*

Another significant factor is the strategic approach to the game, with coaches using players in short bursts. Unlike the outdoor game, individuals are extremely rarely – if ever – required to play the full duration of a match.

In terms of the qualities required of a futsal player, Dr Lefevre states: *"In futsal, rotation of players is essential to enable the team to sustain the rhythm. We can now define the exact player profile needed for the team, namely one who can hold an extremely intense rhythm for 90 seconds, 3 minutes or 5 minutes."*





Gerhard Rehberg (left), President of FC Schalke 04, presenting a shirt to Kurt Meyer, scorer of Germany's 2002 goal of the year.

WITTERS

ALIVE AND KICKING

Germany encourages senior citizens to stay in the game

Last year, television viewers in Germany reckoned that Kurt Meyer had scored the Goal of the Year. It so happened that Kurt was an 80-year-old striker playing in the veterans' side at the Recklinghausen Blau-Weiß Post club. It provided food for thought. And one of the topics addressed at the German Football Association's (DFB) meeting in Bad Blankenburg for Leisure and Popular Sport Experts was the best way to encourage older people to play football and the optimal conditions for them to do so. Dr Nadja Schott, an expert in sports science from the Justus-Liebig University in Giessen, gave a presentation on "Football for Older People" and Stephan Brause of the DFB sent 'Medicine Matters' a thought-provoking report.



Aimé Jacquet shows how footballers can continue to play after their careers are over.

In years to come, Germany's demographic configuration will undergo considerable change in terms of age groups. By 2030, one in three Germans will be over 60. That's reason enough for the Leisure and Popular Sport experts in the 21 state associations to start thinking about how to make football attractive to senior citizens. A glance at current statistics shows that associations are especially lacking in active members over the age of 40 and that, the higher the age group the worse the situation. Only one in four men and one in ten women over the age of 60 is a registered member of a sports club. Nadja Schott wants to see this change. *"We have to keep older people active and offer them activities appropriate to their age group. Doing so will enable the clubs to keep them as members."*

The participants in Bad Blankenburg agreed that football can be a very effective tool for attaining this objective. Schott comments "football can be played throughout an entire lifetime". She warns, however, that the game should be modified to suit the



PHOTO NEWS

Ilse De Bourdeaudhuij, Professor of Movement and Sports Sciences at the University of Ghent.

specific medical needs of older players (over 40) and seniors (over 60). *“As people grow older, they lose muscle mass, their skeletal and muscular systems grow weaker, and reduced vision makes anticipation more difficult. Their hearing also worsens and they process incoming information more slowly. We have to adjust to the changes by creating new forms of the game. For older people, the main point of playing football should be to stay healthy.”*

Schott maintains that, since the classic competition framework is the only possibility currently open to players over 40, football has an opportunity to become more attractive to this target group by changing the regulations. Possibilities, she says, include reducing the number of players or the size of the pitch, or using a heavier ball. *“Fair play should be given particular emphasis and tackling should be strictly prohibited”*, says Schott. Offerings for the over-60 group are usually limited or non-existent in normal football clubs. This means that older and senior players find very few opportunities to play outside special ‘SOMA’ teams. This is why,

according to Nadja Schott, we have to re-think. *“Football should be one element of the sporting activities that make up an hour of exercise. Greater emphasis should be placed on other components, such as targeted warm-up and cool-down phases.”* Regular football clubs could also set up “healthy heart” or “senior sports” groups whose leaders would be specially trained to work with older people.

The participants in the Leisure and Popular Sport Committee agreed that, in future, the clubs should work even harder to meet the needs of their older members, in order not to lose them. *“Today we have laid the foundation, and now we have to turn that into practical implementation”*, says Bernd Münchgesang. The DFB’s new coach training criteria have set the stage for these efforts to succeed. Since the beginning of this year, the DFB C-licence training course has included the option to specialise in sport and football for seniors. This step in the right direction will, in the future, provide many other older people to follow the goal trail opened by ‘golden oldie’ striker Kurt Meyer.

“It’s important that seniors keep on moving,” comments Ilse De Bourdeaudhuij, professor of Movement and Sport Sciences at the University of Ghent and prime-mover in a project to promote greater physical activity – not only sport – among the Belgian public. *“I wouldn’t encourage them to start playing football at that age, but I would support them continuing to play if they have done so in the past – preferably with the competitive edge removed and with priority clearly given to enjoyment. So the clubs need to be prepared to offer this type of recreational football instead of focusing on the competitive side – and not only for the senior age-groups.”*

“It’s also good psychologically and in terms of self-confidence,” she adds. *“We’re talking about an age group that has to cope with retirement. Instead of being active at their place of work, people tend to become more sedentary at home and, at the same time, they lose a lot of contacts. So encouraging them to stay involved in football at their clubs is also positive from a sociological point of view.”*

A (VERY) COMMON COLD?



Is it an unfounded suspicion that professional footballers seem to suffer more colds and upper respiratory tract infections than the population at large? "That's probably a study that needs to be done," responds Michael Gleeson, professor of exercise biochemistry at Loughborough University in England.

"But it is a fact that endurance athletes and sportsmen in other disciplines who train for two hours per day or more are more susceptible to infections. They show evidence of depressed immune-cell function after exposure to intensive training. I can't provide factual evidence of how this applies to footballers but logical thinking would imply that it does."

Professor Gleeson has researched the effects of intensified training on immune function in cyclists including neutrophil and monocyte oxidative burst, lymphocyte proliferation and cytokine production. He has ascertained that a week of intensive training can produce chronic immuno-suppression conditions with significant variation in leukocyte numbers and lower antibody response to vaccination. The effects were fully reversed only after two weeks of light recovery training.

"In football," he comments, "we have done research into immune-cell function but using simulated football-game conditions – the varying intensities of effort required by the mixture of walking, running,



High-intensity training requires medical precautions.

sprinting, jumping and so on. That didn't reveal a marked effect on immune functions in comparison with long, sustained exercise, such as a marathon. Even during a competitive game, football does provide opportunities for rest breaks. But our testing didn't mirror the intensity at elite level – premier league football or international games where the demands are higher. We then conducted some tests using what we call the Loughborough intermittent shuttle

test and we found markedly larger stress hormone responses and started to see a degree of immuno-depression.

"The other facet that is difficult to measure is the contribution of stress and anxiety. Professional footballers have to cope with another range of psychological stresses. They may be in the media spotlight; relationships within the dressing-room – with team-mates or the manager – can be stressful,



KEYSTONE

Rehydration is an important factor in a training session.

as can situations like the negotiation of a new contract, rumours of a transfer or simply failure to feature in starting line-ups. Elite footballers, apart from the physical demands, are subjected to a lot of background stress. Psychological literature endorses the fact that when an athlete is exposed to intensive training there is an increased risk of mood or behavioural changes and depression."

Professor Gleeson's research also indicated that two strenuous training sessions per day produced a significantly larger immuno-endocrine response, with much higher adrenalin and cortisol levels, even though there had been a

three-hour rest period between the two sessions. What's more, the immune function remained depressed for a considerable period of time.

"Although training twice daily can generate immuno-suppression," he adds, *"I would say that, if a coach wants to do three hours of work in a day, it is better to split it into two bouts of 90 minutes rather than one sustained session. There needs to be a reasonable recovery period between the two sessions, allowing the players to take on appropriate nutrition. We're talking primarily about re-hydration and replenishing the carbohydrate stores. This can also be done by taking 6% carbo-*

hydrate drinks during the training session and immediately afterwards. If you don't ensure adequate nutrition, there will definitely be a higher response to the second session, while a single three-hour session is certain to generate higher stress-hormone responses. So, if you want the players to perform well in morning and afternoon sessions, the best thing is to retain them at the training ground and control their dietary intake. It's a risk if you leave them to their own devices because they might ingest the wrong type of food or even not eat at all, especially if they're being encouraged to lose weight during, for example, a pre-season schedule when training is heavy. Reducing food intake at that stage is a recipe for depressed immune function and the over-training syndrome that produces 'staleness'.

"A couple of seasons ago we looked at immune changes at a premier league club and what we found over the season was quite surprising. We half-expected to find the greatest depression of the immune system at the end of the season. But the lowest values for immune cell functions and concentration of antibodies in saliva were in the November samples. Having said that, the team was going through a patch of poor results at that stage, so psychological stress factors could also have influenced the immuno-suppression condition. As I mentioned before, there is room for research based specifically on top-level football."

UEFA MEDICAL COMMITTEE

The Committee held its first meeting of the season on Monday, 6 October 2003 at the UEFA offices in Nyon. The main points discussed were:

- Doping issues – The Committee proposed an increase in the number of doping tests at UEFA matches.
- Medical certificates for asthma – Players taking medication for asthma must send an appropriate medical certificate to UEFA. The associations will be informed of the procedure by means of a circular letter.
- WADA – The Committee noted that WADA had adapted the article on sanctions on individuals for doping offences in the Anti-Doping Code. These changes effectively allow for individual case management.
- EPO testing – The Committee felt that UEFA should conduct EPO tests on urine samples as of next season.
- Injury study – The Committee requested that injuries be formally recorded at the EURO 2004 tournament in Portugal.
- Artificial turf – UEFA is studying the possibility of allowing matches to be played on artificial pitches. Members of the Committee are conducting research on injuries sustained on artificial surfaces, to assess whether these are safe and appropriate for top level matches.



NUTRITION FOR FOOTBALL PLAYERS

UEFA is keen to provide up-to-date information on correct diet and nutrition for football players. This time we asked Dr Richard Hawkins, from The FA Medicine and Exercise Science Department in Lilleshall (England) the following questions:

1. ■ When did the football world wake up to the news that a good diet in the run-up to a match would have a significant effect on their match performance?

It was as early as the 1960's that research evidence was presented displaying the benefit of carbohydrates on endurance performance. Because the research generally involved runners little attention was paid to it by anybody in the football community. It has taken several decades for professional football to catch up but as an industry it has made massive steps forward in the last decade.

2. ■ What is the best piece of nutritional advice you could give a player?

Keep well hydrated and ensure you consume a sufficient amount of carbohydrates in your diet. Dietary strategies need to be habitual i.e. incorporated on a daily basis and not simply the day before a match.

3. ■ Alan Shearer said he always ate chicken and beans before a match – is this a good meal?

Basically, if everything is done correctly players should eat what they are comfortable with for a pre-match meal. Emphasis should

be on extra fluid intake on match days to ensure that dehydration does not come into play. The chicken and beans provide protein and carbohydrate, however if the preparation has not been right in the week leading up to the game it will not make much difference.

4. ■ Do nutritional trends differ in different countries? – e.g. the Italians always seem very strong in this area. Which is the strongest nation?

In Britain we have some of the world leading experts in the fields of hydration and nutrition relating to performance. Sometimes it takes the practices of other nations to convince the football culture in the UK to take on board these new strategies. It is ironic that the European nations have probably taken the advice provided by our own experts.

5. ■ What would your ideal diet be in the week building up to a match?

Variety is the key – players should enjoy the food they eat and look forward to it. Generally, players need to consume a little less fat and more carbohydrate, 60-65% of the energy content coming

from carbohydrates, 15% from protein and 20-25% from fat. Applying the right strategies immediately following training sessions and consuming a healthy breakfast daily are both important points to follow.

6. ■ What would your ideal meal be the night before a match, and on the day of a match (e.g. Champions League match kicking off at 8:45pm)?

The night before a match would be a high carbohydrate, low fat meal incorporating pasta or rice. It is preferable that this could be of the wholemeal variety which would diminish the insulin response associated with many carbohydrate foods (high GI foods) and this could lead to a sparing of carbohydrate stores through greater fat metabolism. The following day would be begun with whole-wheat cereals, skimmed milk, fruit, yoghurt and fluids. Extra fluids would be consumed throughout the day. A relatively light lunch would be eaten such as chicken and pasta salad or even sandwiches. The energy stores should already be full and you only need to be topping up what you have lost from the liver overnight. From here on in it is personal prefer-



PHOTON EWS

ence – players should be aware how their body responds and what works for them. As long as fatty foods are avoided there should not be a problem.

7. ■ How much energy/liquid does a player lose during a match?
Players can expend 1500 kcal in a game (the daily expenditure for the average man who does not do any exercise is 2500 kcal). Also they can lose anything up to 5 kg in weight. This is equivalent to 5 litres of fluid.

8. ■ How much liquid should a player take before/during/after a match?

This part of the preparation should be well practised during the pre-season away from important games. It is useful for players to take on about 500ml in the hour before a game and if they can take on 250ml at half time then that is also useful. They should weigh themselves before and after to know how much weight they have lost. For every 1 kg lost they need to drink 1,5 litre of fluid.

9. ■ Does the FA have a recommended diet for young players?

We recommend that young players take on board the same advice but emphasise the importance of a varied diet with at least 5 portions of fruit and vegetables per day.

10. ■ Name one good meal for footballers.

Chicken and pasta with a basil and tomato sauce.

11. ■ Name one good drink for footballers

Low fat milkshake – ideally immediately post-game for providing both carbohydrate and protein.

12. ■ Does alcohol have a detrimental effect on a players performance?

Alcohol can enhance dehydration and severely affect the response of the nervous system such as player reactions.

13. ■ How long does it stay in the system?

For 24 hours or more but the negative effects could be much longer.

14. ■ What is the best nutritional story you have come across – e.g. have some players traditionally eaten pie and chips on the day of a game?

Not a pleasant story but it emphasises the point of attention to details in the days before a game and personal preference the day of a game. It has been known for players to be sick immediately before a game due to nerves. The food often looks exactly the same as it did when it was eaten 3 hours earlier. This tells us that limited

digestion has taken place and the player has gained little from the pre-match meal. Players like this need to concentrate on fluids with an appropriate energy content and ensure that they prepare properly in the days leading up to games.

15. ■ Who is the most dedicated player you have met in terms of nutrition?

No one springs to mind – I guess there is room for improvement in the most dedicated professional!



KEYSTONE

Pasta with tomato and basil sauce...

Harm Kuipers was world speed-skating champion in 1975 – “clean, I hasten to add,” he grins – and, these days, he’s professor of movement sciences at Maastricht University in his native Netherlands. He was also a member of the worldwide commission set up by WADA in order to draw up a revised list of prohibited substances which comes into force on January 1st 2004. But, apart from the need to weed out the cheats, he maintains that athletes need to be educated to realise that nutritional supplements are

A LOT OF MONEY VERY LITTLE GAIN



BONGARTS

“The priority at our List Commission meetings was to draw up a definition of doping,” Harm Kuipers explains. “We initially proposed two basic criteria: performance-enhancement and/or a health risk. The WADA board then added a third criterion which is that it must be contrary to the spirit of sport. If two of those three criteria are met, the substance concerned is on the prohibited list.

There is also an addendum explaining the presence of some items on the prohibited list and why certain substances have been removed. Caffeine is off the list, for example, along with local anaesthetics. Administering a local anaesthetic is a medical responsibility that has nothing to do with doping.”

Harm Kuipers recalls that the WADA commission held intensive

discussions on the question of corticosteroids and their lack of performance-enhancement properties. “There was consultation with the IOC,” he reports, “with the result that they remain on the list. The subject of creatine was also on the table. But there is no evidence of benefits in a single sprint or in endurance exercise. Nor is there a health issue. Insulin stays on the list. It has been there since the 1998 Winter Olympics and, even though you can’t classify it as a performance-enhancer, it is definitely a health risk – and a serious one at that. Injecting insulin into a healthy person creates a risk of hypoglycemia and even coma. Personally, I was against keeping it on the list because, before 1998, it wasn’t a problem. Since it has been on the list it is getting to become a problem!”

Personal experience as a top-level athlete and regular contacts via his research projects have convinced Harm that the major pitfall for competitors is misinformation. “I think the

EURO 2004

With all sixteen finalists now known, the EURO 2004 final tournament in Portugal is beginning to take shape. But, more about that in the next issue.

In the meantime, UEFA has confirmed that it will be conducting doping tests both at matches and out-of-competition. The new edition of the doping regulations will be sent to all associations in early 2004, allowing the teams plenty of time to familiarise themselves with the contents and to ask questions if necessary. All team doctors will be invited to the EURO 2004 Workshop in Lisbon in March 2004, at which all procedures regarding doping and medical matters will be explained in detail.

obligation for rule-makers is that if a substance is on the list, there must be a clear justification for its presence. Even the new list could be questioned in one sense – the tendency to believe that everything on the list is a performance-enhancer, even when it is not and no matter how hard you try to convince them that taking them only generates a potential health risk. My personal opinion is that more substances could be removed from the list because they are not performance-enhancing. If athletes take them, frankly, they're being silly by putting their own bodies at risk."

"In soccer," he adds, "players might be tempted to take substances that give them aerobic advantages or amphetamines that might give them greater aggressiveness – but at the expense of lesser coordination and, in consequence, technical skills. My experience in Dutch soccer says that conscious doping is almost non-existent. But footballers, like other athletes, may be persuaded to use nutritional supplements that can be obtained, without appropriate control of ingredients, over the counter or via internet. The advertisements promise fast recovery or better performance

and some even claim that they are 'essential for top-level performance'. Others describe ephedrine as a 'fat burner' and some Chinese herbal substances contain corticosteroids.

"Even though the pseudo-scientific language looks convincing, the claims are all too often not supported by clinical tests. There is no evidence, for example, that dehydroepiandrosterone increases testosterone production as claimed. The doses of 19-norandrostenedione – nandrolone – in nutritional supplements are not performance-enhancing, so the only thing 'positive' about them is the risk of them showing positive in a doping test. The use of human growth hormones (hGH) is claimed to 'enhance muscle growth' yet no studies have shown positive effects and they may even lead to complaints of fatigue and performance deterioration.

"I tell athletes that, if they are determined to buy supplements, they should examine the label carefully and, if it looks impressive, seek advice! In most cases, the main benefactor is the manufacturer. So we need to educate athletes that supplements cost a lot and add very little."



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